Chapter 1 Product Overview

This chapter presents an overview of the hardware components of the HP Workstation.

Product Features

Exploded View

The following image shows a typical HP Workstation xw8200. Drive configurations can vary.

For complete and current information on supported accessories and components, visit http://partsurfer.hp.com.

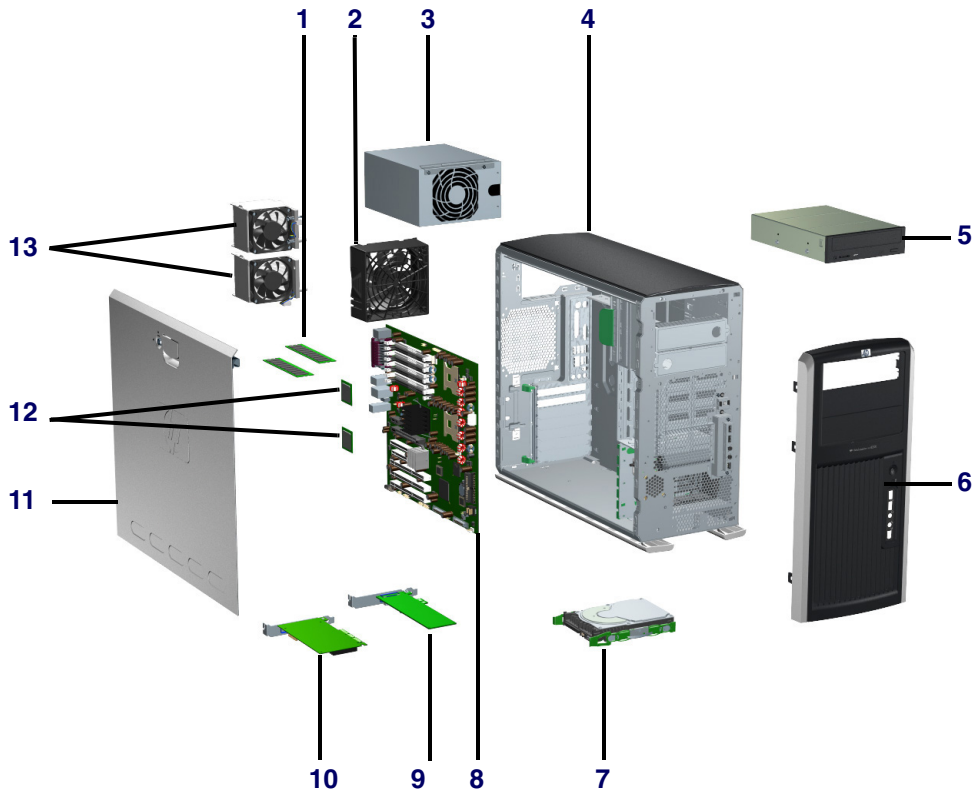


Table 1-1 Exploded View

1	Memory Modules	**6**	Front Bezel	**11**	Access Panel
2	System Fan	**7**	Hard Drive	**12**	Processors
3	Power Supply	**8**	System Board	**13**	CPU Heatsinks
4	Chassis	**9**	PCI Card		
5	Optical Drive*	**10**	PCI-E (graphics)		

*An optical drive is a CD-ROM, CD-R/RW, DVD-ROM, DVD+R/RW, or CD-RW/DVD combo drive.

Front Panel Components

The following image shows a typical HP Workstation xw8200. Drive configurations can vary.

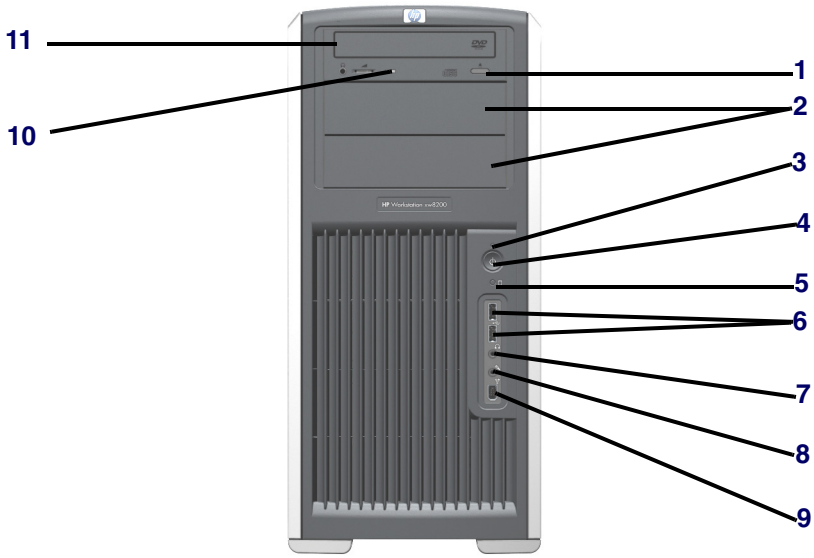


Table 1-2 Front Panel View

1	Optical Drive Eject Button	**5**	Hard Drive Activity Light	**9**	IEEE-1394 Connector
2	5.25-Inch Drive Bays (x2)	**6**	Universal Serial Bus (USB) (x2)	**10**	Optical Drive Activity Light
3	Power On Light	**7**	Headphone Connector	**11**	Optical Drive*
4	Power Button	**8**	Microphone Connector		

*An optical drive is a CD-ROM, CD-R/RW, DVD-ROM, DVD+R/RW, or CD-RW/DVD combo drive.

Rear Panel Components

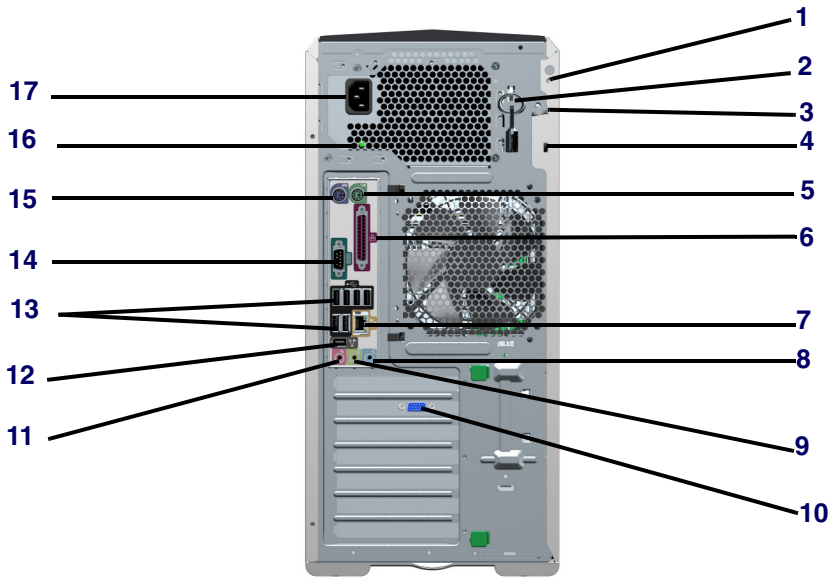


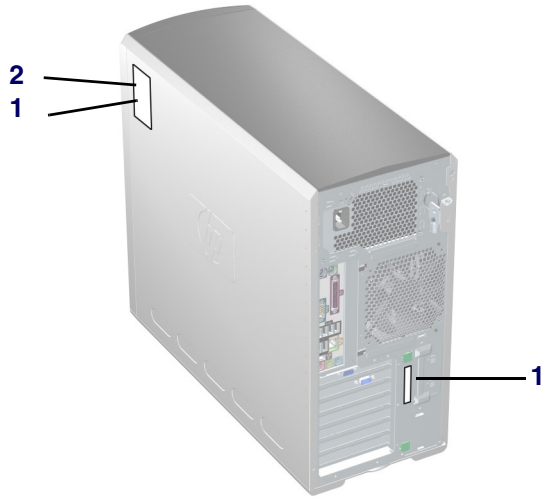
Table 1-3 Rear Panel Components

1	Universal Chassis Clamp Opening	**10**	Graphics Adapter
2	Access Panel Keys	**11**	Microphone Connector (pink)
3	Padlock Loop	**12**	IEEE 1394 Connector
4	Cable Lock Slot	**13**	USB (x6)
5	PS/2 Mouse Connector (green)	**14**	Serial Connector (teal)
6	Parallel Connector (burgundy)	**15**	PS/2 Keyboard Connector (purple)
7	RJ-45 Network Connector	**16**	Built-In Self Test (BIST) LED
8	Audio Line-In Connector (light blue)	**17**	Power Cord Connector
9	Audio Line-Out Connector (lime)		

NOTE: To assist you in connecting your peripheral devices, the rear panel connectors are labeled and color-coded according to industry standards.

Serial Number and COA Label Location

Each workstation has two unique serial number labels. Systems preinstalled with Windows XP also have a certificate of authentication (COA) label **2**. The serial number labels **1** are located on the side panel of the unit and on the rear panel. Keep this number available when contacting customer service for assistance.



Product Specifications

The following table lists the physical dimensions.

Table 1-4 Physical Characteristics

Weight (depending on configuration)	19 - 24 kg (42 - 54 lb)
Tower Dimensions	455 mm (17.9 in.) tall 210 mm (8.3 in.) wide 525 mm (20.7 in.) deep
Rack Mount Dimensions (top cover and foot removed)	210 mm (8.3 in.) tall 440 mm (17.3 in.) wide 525 mm (20.7 in.) deep

Power Supply and Cooling

The workstation has 9 outputs:

- +3.3V—used with PCI, MCH, ICH5, PXH, LAN, SATA and SCSI hard drives, and on-board logic
- +5V—used with storage (disk, optical, diskette), PCI, Audio, USB, input to on-board regulator, and on-board logic
- +12V-A—used with PCI, fans, input to onboard regulators that supply 1.2V, 1.5V, and 1.8V
- +12V-B—used with storage (disk, optical, floppy)
- +12V-C—used with PCI Express x16 auxiliary connector
- +12VCPU0—input to onboard regulator that supplies power for CPU0
- +12VCPU1—input to onboard regulator that supplies power for CPU1
- -12V—used by PCI
- 5VSB—used for sleep circuitry

Table 1-5 Power Supply and Cooling (Voltage)

Voltage	Minimum	Maximum
3.3 V	3.17 V	3.47 V
5 V	4.85 V	5.25 V
12 VCPU0	11.52 V	12.6 V
12 VCPU1	11.52 V	12.6 V
12 V-A	11.52 V	12.6 V
12 V-B	11.52 V	12.6 V
12 V-C	11.52 V	12.6 V
V12N	-11.4 V	-12.6 V
5 VSB	4.85 V	5.25 V

Table 1-6 Power Supply and Cooling (Current)

Current	Minimum	Operating	Continuous	Maximum
3.3 V	0 A	3.1 A	28 A	35.0 A
5 V	0 A	2.3 A	19.9 A	25.0 A
12 VCPU0	0 A	3.1 A	11.4 A	13.7 A
12 VCPU1	0 A	0 A	11.4 A	13.7 A
12 V-A	0 A	0 A	9 A	11.6 A

Table 1-6 Power Supply and Cooling (Current)

Current	Minimum	Operating	Continuous	Maximum
12 V-B	0 A	0 A	3.8 A	11.7 A
12 V-C	0 A	0 A	7.1 A	11.8 A
V12N	0 A	0 A	0.5 A	0.8 A
5 VSB	0 A	0 A	1.5 A	2 A

WARNING! Do not exceed 135 W of a 5 V and 3.3 V power combination.

WARNING! Do not exceed 43 A (516 W) of 12 V (CPU0/CPU1/A/B/C) power combination.

WARNING! Do not exceed 600 W of total continuous output power.

Power Supply Specifications

Table 1-7 Power Supply Specifications

Full Ranging Input (No Line Select Switch)	Yes
Active Power Factor Correction (APFC) (Input Current is nearly 1/2 a non-APFC PS)	Yes
Passive Power Factor Correction (PFC)	No
Operating Voltage Range	90 - 264 VAC / 118 VAC
Rated Voltage Range	100 -240 VAC
Rated Line Frequency	50-60 Hz / 400Hz
Operating Line Frequency Range	47 - 66 Hz / 393 - 407Hz
Rated Input Current	10A / 8.6A
Maximum Rated Power	600 W
Heat Dissipation	Typical 1206.2 btu/hr Maximum 3150.5 btu/hr
Power Supply Fan	92mm variable speed
PS Size (wide x high x deep)	98mm x 160mm x200mm
ENERGY STAR Compliant	Yes

Table 1-7 Power Supply Specifications

FEMP Standby Power Compliant(<2W in S5 - Power Off)	No
BIST LED	Yes
Surge Tolerant Full Ranging Power Supply	Withstands power surges up to 2000V

Power Consumption and Cooling

The following table shows the power consumption for a typical configuration (based on primary power consumptions):

- Two processors (2x3.6 GHz Xeon)
- 1 GB memory (2x512 MB)
- Two hard drives (2xSATA 40 GB)
- DVD-ROM drive
- PCI Express graphics card (FX1300)
- Diskette drive
- One monitor

Table 1-8 Power Consumption and Cooling

Input Power Consumption[a]	**@ 120Vac/60Hz**
Typical operating mode	353.3 W = 1206.2 btu/hr
Windows XP Idle	210.3 W = 717.6 btu/hr
Hibernate mode (S4)	5.9 W = 20.1 btu/hr
Power Off (S5)	5.9 W = 20.1 btu/hr

a. Approximate values

NOTE When you turn off your workstation with the power button on the front panel, the power consumption falls below 10 W. To reach zero power consumption, either unplug the workstation from the power outlet or use a power strip with a switch.

For additional information on power-saving features, refer to your operating system documentation.

System Fans and Airflow

The workstation includes one rear system fan, one CPU heatsink fan for each processor (CPU), one power supply fan, plus optional front system fans.

Resetting the Power Supply

If an overload triggers the power supply overload protection, all power is immediately cut. To reset the power supply unit:

1 Disconnect the power cord.

2 Determine what caused the overload and fix the problem.

3 Reconnect the power cord and reboot the workstation.

When you power down the workstation through the operating system, power consumption falls below the low power consumption but does not reach zero. This on/off feature extends the life of the power supply.

Environmental Specification

Table 1-9 Environmental Specifications

Temperature (operating)	40° to 95° F (5° to 35° C)
Temperature (non-operating)	-40° to 140° F (-40° to 60° C)
Humidity (operating)	8% to 85% RH, non-condensing
Humidity (non-operating)	8% to 90% RH, non-condensing
Shock (operating)	1/2-sine: 40G, 2–3ms
Shock (non-operating)	1/2-sine: 160 cm/s, 2–3ms, (~100G) square: 20G, 422 cm/s
Vibration (operating)	Operating random: 0.5G(RMS), 5–300Hz
Vibration (non-operating)	Random: 2.0g(RMS), 10–500Hz
Maximum Altitude (operating)	0–10,000 ft (3,048 m)
Maximum Altitude (non-operating)	0–30,000 ft (9,144 m)

PCI Card Slot Power Specifications

Your workstation contains two PCI slots, two PCI-X 100 slots, one PCI-X 133 slot, one PCI Express x8 slot (prime has x4 performance), and one PCI Express x16 (graphics) slot that support a total maximum power of 210W. Each PCI/PCI-X/PCI-E x8 slot supports a maximum of 25W. The PCI-E x16 high-end graphics slot supports a maximum of 150W total power when combined with the provided second connector from the power supply.

NOTE If a graphics card requiring more than 75W is installed, HP recommends not using slot 3, which is the PCI slot below the graphics slot. In addition to these slot power specifications, the overall power

consumption of the system (including I/O cards, processors, memory, drives) must not exceed the maximum ratings of the system power supply.

For hardware specifications of other system components, such as graphics cards or optical drives, refer to the website of the specific manufacturer.

ENERGY STAR

The ENERGY STAR® program, a government-backed initiative, promotes energy efficiency by identifying ways to reduce energy consumption. Select HP workstations participate in the ENERGY STAR program.

NOTE ENERGY STAR is not supported on Linux-based workstations.

For those workstations that support ENERGY STAR and have it enabled, the power management features will be set as follows:

- Monitor—goes into sleep mode after 20 minutes of inactivity.
- System—goes into Hibernate mode after 25 minutes of inactivity.
- Hard Drive—goes into power savings mode after the system goes into Hibernate mode.

NOTE If you have to restore the operating system, reset the ENERGY STAR settings (if applicable) after the restore.

To verify the factory default power settings for your product, select **Start>Control Panel** and double-click **Power Options**.

ENERGY STAR Compliance

HP products purchased with the ENERGY STAR configuration are compliant with the U.S. Environmental Protection Agency (EPA) ENERGY STAR Computers Program. The EPA ENERGY STAR configuration does not imply endorsement by the EPA. As an ENERGY STAR Partner, HP has determined that products with the ENERGY STAR configuration meet the ENERGY STAR guidelines for energy efficiency.

The ENERGY STAR Computers Program was created by the EPA to promote energy efficiency and reduce air pollution through more energy-efficient equipment in homes, offices, and factories. HP products achieve this by reducing the power consumption when not being used.

ENERGY STAR on HP Workstations uses ACPI power management. The system can wake as a result of a user action (keyboard or mouse) or from the network or a modem.

The Power Management feature, when used in conjunction with an external ENERGY STAR-compliant monitor, will support the power-down features of the monitor. The Power Management feature allows an external monitor to go into low-power mode when the energy save timeout occurs.

CAUTION Using the Energy Save Monitor feature with non-ENERGY STAR-compliant monitors might cause video distortion when the Energy Save timeout occurs.

Hyper-Threading Technology

Hyper-Threading Technology, developed by Intel®, enables a single processor to execute multiple threads of instructions simultaneously. Hyper-Threading Technology enables the processor to utilize its execution resources more efficiently, delivering performance increases and improving user productivity. Not all systems benefit from the Hyper-Threading Technology.

To see if Hyper-Threading Technology can benefit you, test your system by turning the feature on. To do this, run Computer Setup (F10) during the boot process and select **Advanced>Processors>Hyper-Threading**, and enable the Hyper-Threading Technology.

NOTE The Hyper-Threading Technology is recommended for use with Windows XP systems. This technology is detected by the system and is turned on in the operating system after it is enabled in the system BIOS.

NOTE The Hyper-Threading Technology is not recommended for use with Windows 2000-based workstations.

NOTE With the release of Red Hat Enterprise Linux WS 3.0, Hyper-Threading Technology is compatible with Linux-based systems. Before this technology can be enabled, an SMP kernel must be installed on your system.

For more information about the Hyper-Threading Technology, visit the Intel website at http://www.intel.com.